



Space News Roundup

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No. 48

Galileo descends into Jupiter's surface

Probe parachutes in to relay information about planet's surface

NASA's Galileo spacecraft radioed confirmation late last week that it has entered Jupiter's environment, crossing over the boundary from interplanetary space into the giant magnetic cocoon around Jupiter called the magnetosphere.

"With the spacecraft now in the magnetosphere, we begin our first direct measurements of the Jupiter system," said Galileo Project Manager William O'Neil at the Jet Propulsion Laboratory.

Data from Galileo's magnetometer confirmed that the spacecraft passed the milestone on Nov. 26 at a distance of about six million miles from Jupiter's cloud tops. After a

six-year voyage through the solar system, Galileo is less than a week away from taking up permanent residence around Jupiter. On Thursday, Galileo's previously deployed atmospheric probe plunged into Jupiter's cloud tops and descended into the giant planet on a parachute. Overhead, the Galileo spacecraft itself collected and record data radioed from the probe during the 40- to 75-minute probe mission. An hour after the probe mission was completed, Galileo began to fire its onboard rocket to slow down and allow itself to be captured into orbit around Jupiter to begin a two-year mission of closeup studies of Jupiter's large moons, the planet itself, and continuous

measurements of the magnetosphere.

Jupiter's magnetosphere is like a giant bubble around the planet. A shock wave—called "bowshock" after the wave that builds before the bow of a ship—exists where the magnetosphere faces the stream of charged particles flowing outward from the Sun, called the solar wind. As the solar wind flows around Jupiter, the magnetosphere tapers off like a wind sock, with the whole invisible structure moving in response to buffeting by the solar wind.

Galileo scientists said they first saw signs of the bowshock on Nov. 16, but the bowshock apparently moved back and forth in response

Please see **GALILEO**, Page 4



Galileo's previously deployed atmospheric probe plunged into Jupiter's cloud tops Thursday and descended into the giant planet on a parachute.

New space, life science director named

By Eileen Hawley

H. David Short, assistant professor of surgery at Baylor College of Medicine, has been named director of Space and Life Sciences.

Short's appointment was effective Monday under an Intergovernmental Personnel Assignment between NASA and Baylor. He replaces Donald Robbins who served as acting director.

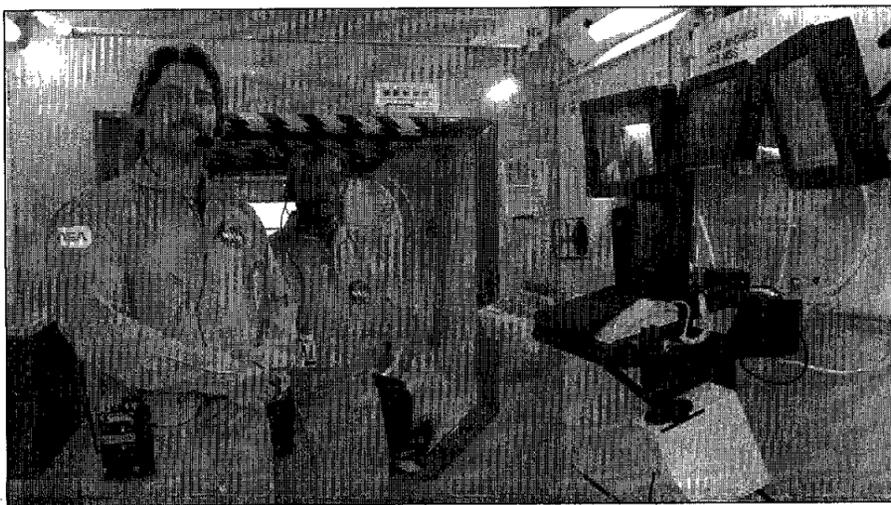


Short

"I am pleased to welcome Dr. Short to this important position," NASA Administrator Daniel S. Goldin said. "He brings a wealth of scientific expertise and leadership capability that will be essential in planning and implementing the invaluable science that will be conducted on the space shuttle and the International Space Station."

The Space and Life Sciences Directorate manages programs in medical science, biological research, lunar and planetary research and support to astronaut flight crews.

Short teaches at Baylor College of Medicine, treats patients and specializes in clinical research on organ transplantation. A clinical transplant surgeon, Short performed research that helped develop the current heart and lung transplant programs at Baylor and The Methodist Hospital. He also has done research on the heart assist pump developed by Baylor surgeon Dr. Michael DeBakey in conjunction with NASA.



Top: Jim Dean and Renee Julian, both of the Space Station Program Utilization Office, use the Integrated Services Digital Network to communicate with school children in San Antonio and meeting attendees in New Hampshire last week. Right: Jay Cory, left, of Johnson Engineering, and Mike Prendergast of the Flight Crew Support Division control the video switching to enable Dean and Julian to talk with the students and give tours of the various space station mock-ups.

JSC Photo by Mark Sowa



Interactively educating kids

By Karen Schmidt

Students from several schools in San Antonio and Christa McAuliffe Foundation meeting participants in New Hampshire were treated to an interactive tour of the space station last week via desktop video conferencing that someday could be used to keep orbiting astronauts in touch with their families.

Fourth grade students from Travis Elementary, Dellview Elementary and Morrill Elementary schools in San Antonio were given a tour of the space station mockup and training facility in Bldg. 9. Renee Julian and James Dean of the Space Station Utilization Office acted as station "crew members" and explained to students how astronauts eat,

Please see **TEACHING**, Page 4

Endeavour rolls to pad

By James Hartsfield

Endeavour was on schedule this week, planned to roll out to Kennedy Space Center's Launch Pad 39B Thursday to take aim at a liftoff on STS-72 perhaps as early as Jan. 11, 1996.

Endeavour was moved from its processing hangar to the Vehicle Assembly Bldg. Nov. 30 and mated to the external fuel tank and solid rockets for STS-72. As preparations continue, the STS-72 crew—Commander Brian Duffy, Pilot Brent Jett, and Mission Specialists Leroy Chiao, Winston Scott, Koichi Wakata and Dan Barry—will travel to KSC Sunday to take part in a dress rehearsal countdown at the launch pad planned for Monday and Tuesday.

STS-72 will retrieve the Japanese Space Flyer Unit from orbit, deploy and retrieve the OAST-FLYER satellite and feature two space walks to test construction equipment and methods for the International Space Station. On Thursday and Friday, the mission will be the focus of a series of press conferences planned to air on NASA Television, beginning with an overview of the mission by Lead Flight Director Bryan Austin at 8 a.m. on Thursday.

Other Thursday briefings will include an overview of the Space Flyer Unit at 9 a.m.; an overview of the OAST-FLYER at 10 a.m.; a description of the NASA/National Institute of Health experiments at 11:30 a.m.; a briefing on the Get-Away Special experiments at 12:30 p.m. and an overview of the Commercial Protein Crystal Growth experiment at 1 p.m.

On Friday, a briefing on the planned Extravehicular Activities will be held at 11:30 a.m. and the STS-72 astronauts will hold a crew press conference at 1 p.m.

Meanwhile, preparations for the second flight of 1996, *Columbia* on STS-75, a reflight of the Tethered Satellite System, also are on schedule. *Columbia* remains in the Bay 2 shuttle processing hangar and is being readied for installation of the three main engines early next week.



STS-74 crew praises ground, support teams

By Karen Schmidt

The STS-74 crew praised the ground and support teams for their excellent work during return ceremonies at Ellington Field last month.

"Atlantis was perfect," Cameron said. "We had complete ability to do the job that we were sent up to do because the vehicle was so well prepared and ready. We made good steps for the future."

Cameron not only praised the ground crew but each of his crew members and expressed thankfulness that he was matched with such dedicated astronauts.

Pilot Jim Halsell remembered the flight control teams and the special job they did in keeping the crew on track.

"From the ascent team that took us into orbit, to the orbit teams that kept us on track while we were in space, to the entry team that brought us home again, you guys are just incredible," Halsell said.

Mission Specialist Chris Hadfield reflected on how well the training helped the mission run smoothly.

"Very few things went as planned, but everything went as trained," Hadfield said. "Thanks to the guys that trained us for this mission."

Hadfield also commended ground researchers who took the time to buy a guitar for the Mir 20 crew.

"For them to see that someone on the ground had thought of them and had spent the time to research and

Please see **STS-74**, Page 4



JSC Photo by Mark Sowa

JSC Acting Director George Abbey, left, welcomes home STS-74 Commander Ken Cameron at Ellington Field. Cameron returned with his fellow astronauts to Houston after a successful docking with the Russian Mir Space Station.

100%
75%
50%
25%

1995 GOAL: \$460,000

CFC

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

Hockey: Houston Aeros vs. Utah Grizzlies, 7 p.m. Dec. 29 at the Summit. Tickets cost \$12.50.

New Year's Dance: Dec. 31 at the Gilruth Center. Tickets cost \$25 per person.

Space Center Houston: Discount tickets, adult, \$8.75; child (3-11), \$7.10.

Movie discounts: General Cinema, \$4.75; AMC Theater, \$4; Sony Loew's Theater, \$4.75.

Stamps: Book of 20, \$6.40.

JSC history: *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

Metro tickets: Passes, books and single tickets available.

JSC

Gilruth Center News

Sign up policy: All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

EAA badges: Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

Aerobics: Classes meets 5:15-6:15 p.m. Tuesday, Thursday and Friday and 9:30-11 a.m. Saturdays. Cost is \$35 for 11 weeks.

Women's self defense: Martial Arts training for women only from 5-6 p.m. Tuesdays and Wednesdays. Cost is \$25 a month.

Weight safety: Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. Dec. 12 and 26. Pre-registration is required. Cost is \$5.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aikido: Martial arts class meets from 5-7 p.m. Wednesday. Cost is \$25 per month. New classes begin the first of each month.

Ballroom dancing: Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

Country and Western dancing: Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

JSC

Swap Shop

Property

Sale: Taylor Lake Estates wooded lot 90' x 135', can finance, \$39.5k obo. Don, x38039 or 333-1751.

Sale/Lease: Queens Court II, Nassau Bay, townhome, 3-2.5-2, 4895/mo/\$93.3k. Marilyn, 333-1700.

Sale: Clear Lake condo, 1-1 w/study, carport, alarm access gates, W/D, appli, storage, \$43.5k. 977-5763.

Sale: OakBrook west, 2 story 4-2.5-2, mature trees, home warranty, \$120k. x35019 or 488-2756.

Sale/Trade: LC, Ellis Landing, 4-2-2, w/2 story barn, your house/condo in trade, \$89.9k. x41929 or 332-3775.

Sale: Lake Pinston, Shelby County, 10 acs, has a spring for pond, \$20k obo will finance. 334-2379.

Rent: Waterfront townhome, South Shore Harbor Marina, furn, 2-2.5, boat slip avail, \$1.9k/mo. 334-5000.

Sale: LC, Bayridge subdivision, 3-2-2, cul-de-sac street, \$55k. James, 286-1934.

Rent: Santa Fe, TX, duplex, 3-1.5, appli, central air/heat, W/D conn, sm yard, non-smokers, no pets, \$500/mo + sec dept. 244-0250.

Sale: Waterfront lot, Galv Bay Seabrook, all utility taps, Corps bulkhead permit. Ed Shumliak, x37686 or 334-7985.

Rent: Lake Travis cabin, priv boat dock, central air/heat, equipped, sleeps 8, full \$550/wkly, \$120/dly. 474-4922.

Rent: South Lake Tahoe cabin, 3-2, W/D, TV/VCR, sleeps 8, \$75/ntly, w/ky/holiday rates. x41065 or 326-2866.

Rent: Condo in Winter Park, CO, 2-2, furn, sleeps 6, hot tub/heated pool, ski season/spring break avail. 488-4453.

Rent: Vail, CO, 3 BDR condo, ex location, sleeps 10, \$250/ntly, \$1.5k/wkly. Bill, x47311 or 326-2326.

Cars & Trucks

'90 Toyota Supra Turbo, all options, ex cond, \$11.5k. Mike V., 780-0044 or 589-1076.

'87 Grand AM SE Turbo, black, power, new engine & turbo, 57k mi, 1 owner, ex cond, \$3.1k. Chuck, 282-3588.

'89 BMW 525i, silver, maint records, 96k mi, great cond, \$10.6k. 488-1320.

'87 VW Fox, 4 dr, dk blue w/ grey inter, 4 cyl, AM/FM/cass, 96k mi, 4 spd, \$1.5k. Kathy, x34592.

'87 Honda Accord LX, 4 dr, auto, A/C, cruise, stereo, \$4,950. 488-7771.

'87 Mazda Cab Plus truck, B2000 series, ex cond, 1 owner, rebuilt eng w/10k mi, new clutch, A/C, AM/FM/cass, camper top, \$3.7k. Brent, x36531 or 326-6420.

'88 Mazda 626 LX, loaded, moonroof, 5 spd, wht ext, burgundy inter, ex cond, 99k mi, \$4,750. Jeff, x41947 or 286-6785.

'88 Ford Taurus GL station wagon, \$2.2k. 326-1400.

'86 Mazda RX7, gold w/burgundy inter, runs well, new tires, sunroof, 72k mi, std, \$2,850. 532-4191.

'74 Mercedes 280, sunroof, 1 family owned, 113k mi, ex cond, obo. 333-1789.

'87 Pontiac Grand Am SE, 2 dr, blue, A/C, pwr, 62k mi, ex cond, new tires, \$4k. 280-8125.

'91 Chevy ext cab SWB pickup, loaded, 350 eng, 68k mi, \$13k. 332-6470.

'85 Chevrolet Celebrity station wagon, good cond, auto, A/C, AM/FM, \$4.6k obo. 244-7904 or 474-9131.

'95 Toyota 4-Runner 4x4, every option, black, ex cond, low miles, \$28k. Tony, x36956 or 903-2946.

'85 Corvette, runs, 1 owner, auto, needs some repair, \$6.5k. 383-3741.

'89 Ford Escort wagon, good work/family car, runs great. \$1.6k. James, 286-1934.

'86 Toyota Celia, 2 dr, security system, 5 spd, \$2.9k. Jim, x35853 or 474-7747.

'92 Blazer Lt, green/tan, 33k mi, security sys, alloy wheels, loaded, ex cond, \$15k. 286-7001.

'93 Nissan 240sx Sport Coupe, maroon, ex cond, new tires/brakes, auto, A/C, AM/FM/cass, ext warr, 39k mi, \$12.9k. Tammy, x38853 or 488-5352.

'88 Buick Le Sabre, 4 dr, low mi, 1 owner, ex cond, \$3,950. 282-4224 or 488-1397.

'91 Explorer, Eddie Bauer, leather inter, CD, sunroof, kill switch, tinted windows. x38281 or 486-5503.

'89 Plymouth voyager LE minivan, 7 pass, A/C, overhd console, pwr, AM/FM/cass, cruise, tilt, capt chairs, gray/wood grain, \$5.4k. x39152 or 333-2218.

'78 Dodge custom van, everything works, \$1k. 326-2758.

'90 Airex 36' motorhome, low mi, \$44k. Brian, x53822.

Cycles

'93 Suzuki GSXR-750, ex cond, fresh tuneup, low mi, \$5.5k. Tony, x36956 or 903-2946.

'85 Honda V65 Magna, 1100 cc, 15k mi, windshield, luggage rack & trunk, \$2,150. Bill, x47928 or 488-1689.

'91 Harley Davidson Deluxe Sporster, ex cond, low mi, extras, \$7k. x34908 or 409-925-7224.

'86 Honda Gold Wing Aspen cage, good cond, blue, \$4.5k obo. 334-1119.

'89 Cruisers Inc, 27', 9hp, A/C, sleeps 6, \$23.5k; '88 Checkmate, 14', \$2.6k. x31932.

Mckee Craft, 15', 70hp Evinrude, pwr tilt & trim, depth finder, center console, \$225. don, x38039 or 333-1751.

'95 SeaRay 175BR, 135hp Merc, galv trailer, low hrs, garage kept, extended warr, \$9,650. Robert, x37739 or 996-7512.

Sovereign, ready to sail & ex cond, main, jib, 125% genoa, depth sounder, head, stove, electric start Johnson OB, \$5.7k. Mike, 282-2787 or 286-1691.

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Today

Cafeteria menu: Special: tuna noodle casserole. Total Health: broiled chicken breast. Entrees: deviled crabs, broiled pollock, liver and onions, broiled chicken with peach half, Reuben sandwich. Soup: seafood gumbo. Vegetables: Italian green beans, cauliflower au gratin, steamed rice, vegetable sticks.

Monday

Cafeteria menu: Special: Italian cutlet. Total Health: herb flavored steamed pollock. Entrees: barbecue beef spare ribs, steamed pollock, baked chicken. French dip sandwich. Soup: black bean and rice. Vegetables: California mix, okra and tomatoes, vegetable sticks, ranch style beans.

Tuesday

Blood Drive: Krug Life Sciences will host a blood drive from 8-11:30 a.m. and 1-3:30 p.m. at 1290 Hercules. For more information call Susan Epperson at 212-1205.

Photo club meets: The Bay Area Photo Club will meet at 7:30 p.m. Dec. 12 at the Faith Covenant Church. For more information call Kelly Prendergast at x37655.

Cafeteria menu: Special: spaghetti with meatballs. Total Health: baked potato. Entrees: stir fry beef, liver and onions, beef cannelloni, ham steak French dip sandwich. Soup: split pea. Vegetables: winter blend mix, seasoned cabbage, breaded squash, lima beans.

Wednesday

Toastmasters meet: The Space-land Toastmasters Club will meet at 7 a.m. Dec. 13 at the House of Prayer Lutheran Church. For more information call Elaine Trainor at x31034.

Blood Drive: Lockheed Martin will

host a blood drive from 8-11:30 a.m. and 1-3:30 p.m. Dec. 14 at 2450 NASA Road 1. For more information call Gayle Brown at 333-6514.

Open House: The JSC Acting Director will host a Christmas open house from 11:30 a.m.-1:30 p.m. Dec. 13 in the Bldg. 3 cafeteria. Come by for cookies, punch and Christmas music. For more information call Ginger Darnell at x31983.

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Dec. 13 in the executive dining room in the Bldg. 3 cafeteria. For more information call Michael Ruiz at x38169.

SSFF meets: The Space Station Future Fighters will meet at noon Dec. 13 at the Freeman Memorial Library at 16602 Diana to celebrate its four year anniversary. For information call David Cochran at 482-7005.

Astronomy seminar: The JSC Astronomy Seminar will present and open discussion meeting at noon Dec. 13 in Bldg. 31, Rm. 129. For more information, call Al Jackson at 333-7679.

Christmas lunch: The cafeteria will host a lunch special from 11 a.m.-2 p.m. in Bldg. 3 and 11 a.m.-1 p.m. in Bldg. 11, Dec. 13. Dinner will include ambrosia salad, turkey and dressing, giblet gravy, cranberry sauce, Italian green beans almondine, candied yams, roll and butter. Cost is \$3.30.

Thursday

SSQ meets: The Society for Software Quality-Houston Chapter will meet at 5:30 p.m. Dec. 14 at the Ramada Kings Inn Crown Room. Contact Leon Sartz at 335-4191 for more information.

Airplane club meets: The MSC Radio Control Airplane Club will

meet at 7:30 p.m. Dec. 14 at the Clear Lake Park Community Bldg. For additional information call Bill Langdoc at x35970.

Cafeteria menu: Special: chicken fried steak. Total Health: roast beef with gravy. Entrees: steamed pollock, lasagna with meat, steamed pollock, catfish, French dip sandwich. Soup: cream of turkey. Vegetables: whole green beans, butter squash, cut corn, black-eyed peas.

Friday

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

Dec. 16

Book reading: Channel 11 anchor Marlene McClinton and her husband Ricky Kaplan will read a new children's book "NASA and the Man in the Moon" from 1-2 p.m. Dec. 16 at Jeremy's Bookshelf, 2441 Bay Area Blvd. For more information call Sally Jordan at 486-5359.

Dec. 19

NTA meets: The National Technical Association will meet at 6:30 p.m. Dec. 19 at Texas Southern University School of Technology Rm. 316. For more information call Carrington Stewart at x31404.

Dec. 20

Astronomy seminar: The JSC Astronomy Seminar will present Dr. Ramesh Narayan speaking about "Gravitational Lenses" at noon Dec. 20 in Bldg. 31, Rm. 129. For information, call Al Jackson at 333-7679.

Dec. 25

Christmas: Most JSC offices will be closed in observance of the Christmas holiday.

Wanted

Want personnel to join VPSI vanpool departing Meyerland Park & Ride at 7:05 am for JSC. Van pool consist of on-site personnel working 8 am/4:30 pm shift. Don Pipkins, x35346.

Want In-line skates, w/o without pads & gloves, women's size 9 or 9.5, Bauer, California Pro or similar brand, good cond. 866-4083.

Want housemate to share 4 BDR house, newly remodeled, own bathroom, pool & jacuzzi, non-smoker. \$300/mo + 1/3 util. Ken, x31496 or 286-7583.

Want roommate to share 3-2-2 house, non-smoking, no pets, female preferred, \$300/mo + 1.2 util. 484-8640.

Want roommate, non-smoking, to share home in Kenah, own bed/head/phone, \$400/mo + 1/2 util. Rick, 244-8842 or 538-4278.

Want wood lathe, any cond, will consider reasonable price. Robert, x38946 or 488-5945.

Want Waverunner/Jetski w/mechanical problems. Ken, x31496 or 286-7583.

Want sturdy 20' - 40' mast. Michael, x38169 or 482-8486.

Want STS-69 & STS-74 payload & experiment cloth patches & decal. Andrew, x34312 or 280-0647.

Want Delta or Craftsman 10" hvy duty table saw. George Nixon, 488-5967.

Want cheap Macintosh w/word processor. Ken, x34368.

Want to buy Walt Disney tape "Bambi". 332-3168.

Want Disney's "Little Mermaid" video. x31450.

Miscellaneous

Vitamaster Air Bike w/function monitor, ex cond, model#98315, \$75. Stan or Ros, 280-8484.

Browning .40 cal hi-power semi-auto handgun w/2 10 round clips, like new in the box, \$600. Jim, 991-0533.

Coleman gas comp lanterns, \$15; \$25: Coleman gas camping heater, \$25. Gary, x40276 or 488-1043.

Apollo 11 commemorative books published '69 by Gulf Oil, mint condition, \$20 each. Gary, x40276 or 488-1043.

Browning A-bolt 7mm mag w/Leupold 3x9 50mm objective scope, matte finish w/synthetic stock, gun case, gun sling, \$600 obo. Ken, x40280 or 996-0618.

Papasan chair & ottoman w/blue cushions, \$45; dot matrix printer, \$15, 480-5404.

Suzuki Samurai chrome bumper set, easy to install, new \$385 sell \$175. 480-5404.

Single folding metal garage door, w/hardware, \$50. 337-3530.

Fitness Master LT-35 cross country ski machine, \$150. 337-3530.

Pine roll top desk, good cond, \$600; infant back carrier, \$20. x38033.

RVC biplane ready-to-fly, \$215; metal detector, \$50. 282-3570 or 474-3820.

Liftoff Into Cyberspace

Instantaneous multimedia cross-reference becomes powerful tool for sharing

[Editor's note: This is the first installment in a three-part series about how JSC and its organizations are taking advantage of the Internet as a tool for public outreach and internal program management.]

By Bridget Mintz Testa

When JSC lifted off into cyberspace in September 1993, it was due to X-Window system programmer Daniel McCoy, working for what was then the Software Technology Branch (now the Information Technology Office).

"Daniel stumbled onto the World Wide Web by being the first to put out a page with JSC on it," says Chris Culbert, manager of the Information Technology Office, manager of work for all JSC Web pages, and McCoy's former boss. "I stumbled into being the Web pages manager because Daniel worked for me."

For nearly a year, McCoy actually had been waiting for something like the World Wide Web to arrive so he could easily distribute his collected library of X-Windows tools. He knew the Web (<http://www.w3.org/hypertext/WWW/History.html>) was an interactive hypertext medium. That means any document created in the Web's HyperText Markup Language (html)—a formatting language—could link to any other Web document like an instantaneous cross-reference. Web "documents" can be text, graphics, video, and audio.

"The World Wide Web glues together all the different protocols used to transfer files and information across the Internet (the worldwide network of computer networks) with a single interface for a user to browse," McCoy says. But while the Web had been available on the Internet since 1991, there was no easy interface to access Web documents.

The release of Mosaic (<ftp://ftp.ncsa.uiuc.edu/Web/Mosaic/>), the first graphical Web interface or browser, by the National Center for Supercomputing Applications at the University of Illinois, solved the problem. "Nobody used the Web until Mosaic," McCoy says.

McCoy used Mosaic to help create the first JSC home page (<http://www.jsc.nasa.gov/>). Its first link, "What's New," whisked users—browsers—to new JSC pages as organizations built them. The second JSC Web link was to the Software Technology Branch's lab page (then McCoy and Culbert's home branch), the first JSC organization on the Web. "There was really very little out there then," McCoy says. "I was trying to get infor-

mation similar to what other centers had. My main goal was to provide links to existing information."

Shortly after McCoy's JSC page went online, the Engineering Directorate's Automation and Robotics Office Web page (<http://tommy.jsc.nasa.gov/>) went up courtesy of Web designer Daniel Poirot...but the two pages didn't link up for months. In January 1994, Ken Jenks, then in the Space and Life Sciences Directorate, posted the

where onsite. JSC's Internal Home Page lists all public items as well as Center information, like Events, Announcements, and Personnel Search (using all JSC Directories). The samples below highlight some of the JSC home page links.

Earth Science and Solar System Exploration Division home pages (<http://www-sn.jsc.nasa.gov/>) are public outreach tools. Division Webmaster Eileen Stansbery says, "This is public relations geared both

(<http://stic.jsc.nasa.gov/>) is an engineering gold mine. Henri Dumas, Information Manager for the Information Management Branch in Information Systems Division and McCoy's current technical monitor, created it in 1993. Since then he's populated it with myriad links to JSC documents and engineering drawings in electronic formats. Sources include the Science and Technical Information Center, the Engineering Drawing Control Center, the Shuttle Drawing System, and other repositories in Bldg. 227. "We don't know how much information is out there," Dumas says. "This job will never end. But we can capture the best. We're at about 10 percent right now." His ultimate goal is to integrate dozens of center repositories via the Web, saving paper, money, and time spent searching for and retrieving information. "Web tools give me total flexibility in distributing information," he says. "Your only constraint is your imagination."

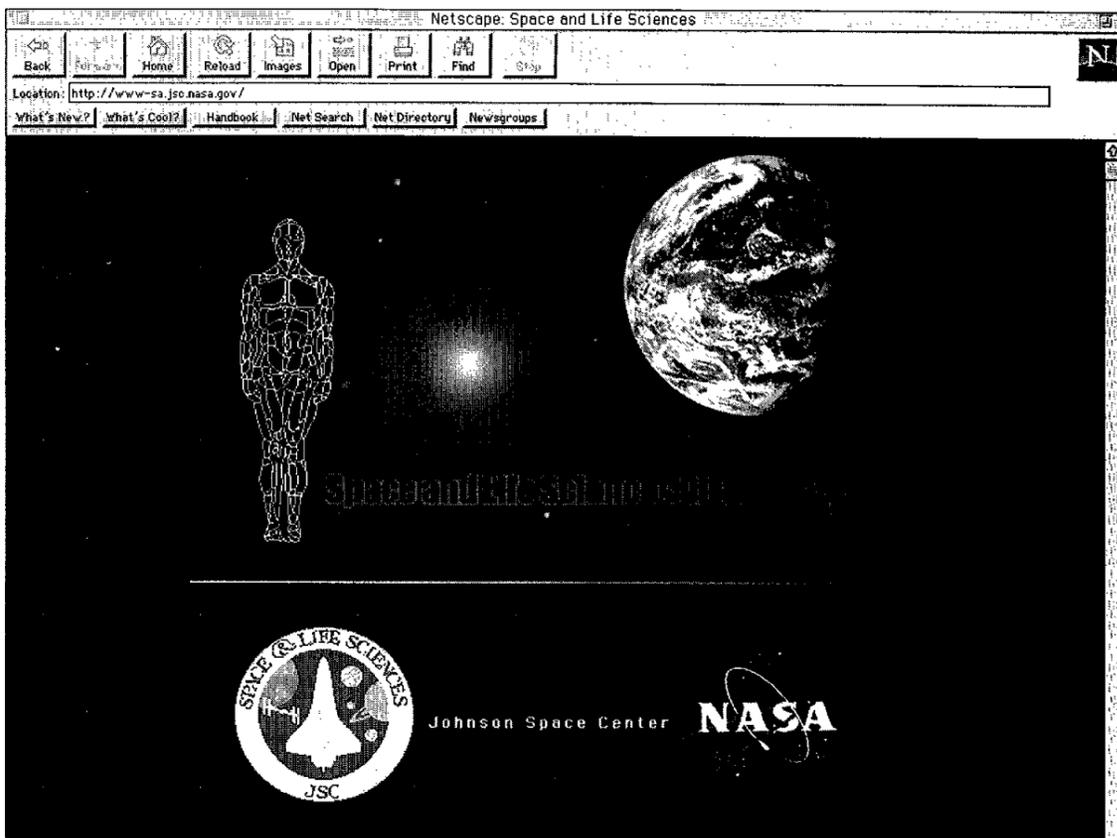
That's assuming you have Web tools, of course. Culbert says Web access is just one of the technical issues he and his team are struggling with in getting JSC fully online. "JSC is pretty good, but not everybody has browsers and network connections yet," he says. "There are really old computers on-site that can't even run this software."

Another issue is Web page development. With more and more JSC organizations heading for the Web, Culbert wants to simplify the process. "We can't build everybody's home page," he says, "but we can help with html. We're also looking to put as many home pages onto a central machine as possible so people don't have to worry about security, access, servers, etc." JSC's current Web server is Krakatoa, a Sun Server 4/470 located in Culbert's Bldg. 12 lab. "Krakatoa was a development machine," Culbert says. "It's now a little underpowered and we're working on getting a higher-powered CPU." Krakatoa also served the International Space Station Web page from March to October 1994, when heavy traffic forced the station page to its own server. Culbert says his organization, especially McCoy, helped the station page group get started. "They learned real fast," he says. "We both learned a lot from each other about security."

Learning and changing fast is essential on the Web—static Web pages quickly lose visitors. So Culbert and his team are revising JSC's Web pages to keep up. The nearly identical internal and external pages will soon sport different looks, with external page content managed by the Public Affairs Office. That follows a new Headquarters mandate issued in August. Kelly Humphries, PAO's Information Services Team leader, says the new public pages will be customer-based, leading visitors quickly to much of the same information available on the internal pages base on who they are—educators, students, news media, scientists or business people, for example.

Another new mandate is the Policy on the Release of Information on Unprotected Computer Systems; it guides JSC employees on what the NASA information is appropriate for placement on publicly accessible computers. The Information Systems Directorate, the JSC Chief Information Officer and PAO are collaborating on the policy's development.

Why go to so much trouble for this new technology? Culbert says, "The Web represents a fundamental change in the way people communicate. It's clearly early in the revolution, but in 10 or 15 years, we'll see a big difference in the way we communicate." □



McCoy

'The Web represents a fundamental change in the way people communicate. It's clearly early in the revolution, but in 10 or 15 years, we'll see a big difference.'

— Chris Culbert, manager, ISD Information Technology Office



Culbert

first officially approved-through the Scientific and Technical Information approval process—online white paper on space and human physiology (the current Space and Life Sciences Division page's address is <http://www-sa.jsc.nasa.gov/>).

Today, JSC's home page has thousands of links, with about 1.5 million "hits" or connections per month. It also has a dual nature. "There are really two JSC home pages," Culbert says. "One is internal—material the JSC community needs to know. The other is public."

Visitors to the public page find links to JSC and NASA services. JSC services include Organizations on the Internet, Services by Subject, What's New, Business Opportunities, Contractors, Site Map, and the Office of the Inspector General. NASA services include these plus Public Affairs and a center map but excludes Business Opportunities and a site map. McCoy personally maintains the JSC Organizations, Services, What's New, and Contractors pages; other pages are maintained else-

towards the general public and the moderately informed technical public interested in humans in space exploration. It's designed to get people excited about exploring again."

Each of the division's branches has a Web page displaying "thumbnails"—small images—in Graphical Interchange Format, along with a short text paragraph. Selecting a thumbnail yields a large, downloadable picture. Stansbery's team's approach to designing the pages was "mainly a brainstorming session about what people want," she says. "And what people want to see are pretty pictures, neat facts, and technical papers."

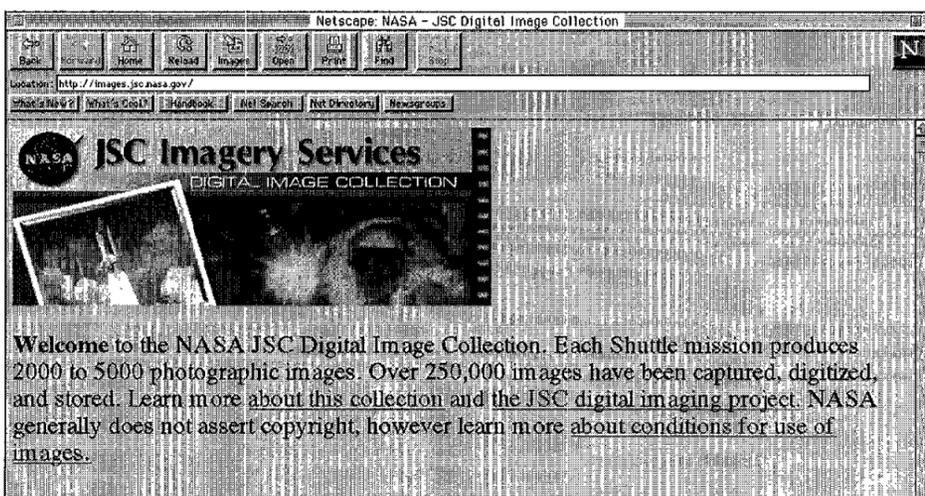
The Office of Technology Transfer and Commercialization's Web page (<http://technology.jsc.nasa.gov/>), designed by Kyle Fairchild, assists NASA technology transfer to the private sector. Fairchild says, "The site is a resource to JSC scientists and engineers who are interested in the commercialization process. It's a way to connect all the technology utilization offices. It's also a resource for the external community, like NASA commercialization centers and business."

Originally containing just a technology utilization white paper, the page today covers technology opportunities at JSC, help with Technology Assistance Requests, commercialization agreements, JSC external partners, and links to other federal commercialization resources. "The site is an entry point to more information about commercialization and getting JSC technologies out the door," Fairchild says.

The Resources Integration, Cost Estimating and Processes Reengineering Team's page (<http://www.jsc.nasa.gov/bu2/>) features the first parametric cost estimating reference manual on the Web, focused on NASA processes and guidelines. Economist Kelley Cyr designed the page to be part of his team's strategy of working closely with the engineering community to improve cost-estimating.

"Engineers need to know enough about cost estimating to provide us with the right data," he says. "With the Web, that information is instantaneously available at your fingertips."

The Science and Technology Information Center's popular internal page



Top: The Space and Life Sciences home page showcases the directorate's programs, research and facilities, and explains that its mission is to be the world's leader in understanding the space frontier and the opportunities, capabilities, and limitations of humans living and working on that frontier. Above: The NASA JSC Digital Image Collection contains images taken throughout the Mercury, Gemini, Apollo, Skylab and Space Shuttle Programs.

Employees receive recognition for outstanding work

JSC Acting Director George Abbey recognized JSC employees last week in an awards ceremony held at Teague Auditorium.

More than 50 employees received Space Act and Suggestion awards. The recipients received a monetary award along with a plaque commemorating their special achievements.

In addition, a certificate of appreciation from the NASA Software Advisory Council was given to Marvin LeBlanc of the Control Center Systems Division.

Suggestion awards were presented to Leslie Keener and Deborah Mast of the Office of the Comptroller, Vann Jones of the Procurement Management Office, Daniel Deger of the Space Flight Training Division,

John Thiel of the Space and Life Sciences Business Management Office, Donald Curry of the Structures and Mechanics Division, Richard Bozeman, Joseph Trevathan and Gregory Aber of the Propulsion and Power Division, James Akkerman of the Engineering Directorate, Joseph Trombley, Charles Verostko, Marybeth Edeen, Daniel Barta and Charles Verostko of the Crew and Thermal Systems Division, and Steven Koontz of the Manufacturing, Materials and Process Technology Division.

Tech Brief awards were presented to Michael Pham of the Propulsion and Power Division, Robert Trevino of the JSC Projects Office, Jay Wright of the Institutional Safety and Quality Division, Paul Coan of the Information Services Division, Mark Rorvig

of the Technology Systems Division and Thomas Goodwin, Peggy Whitson, Clarence Sams, Lakshmi Putcha, Roger Billica, Duane Pierson and Laurie Aten of the Medical Sciences Division.

Cosmic Software Author awards were presented to Edward Chimenti, Steven Rickman and Robert Vogt of the Structures and Mechanics Division and Horst Ehlers of the Manufacturers Materials and Process Technology Division.

Patent application awards were presented to Michael Eubanks of the Engineering Directorate, Horacio de la Fuente and Anthony Dao of the Structures and Mechanics Division, George Salazar, Dena Haynes, G. Dickey Arndt and Thanh Nguyen of the Avionics Systems Division, Larry Li,

Dennis Wells and Jane Malin of the Automation Robotics and Simulation Division, Dennis Morrison of the Medical Sciences Division and Jeanne Crews and Eric Christiansen of the Earth Science and Solar System Exploration Division.

Space Act Board awards were presented to Mark Rorvig, Robert Shelton, Christopher Ortiz and Huyen-Anh Ly of the Technology System Division, Robert Savely of the Information Systems Directorate and Peggy Whitson of the Medical Sciences Division.

Several contractors received honorable mention for the Software of the Year award including, Matthew Barry of Rockwell, Steven Weismuller and Kevin Scott of Management Systems Designers and David Hasan of Lincom.

Employees honored at launch

Twenty-nine JSC civil service and contractor employees watched the Nov. 12 launch of STS-74 on the second mission to dock with the Russian Mir Space Station at Kennedy Space Center as recipients of the Space Flight Awareness Award.

The honorees also received a VIP tour of KSC and attended a reception held to recognize their dedication to quality work.

Astronaut Rick Linnehan presented all the honorees with framed certificates and pins.

Civil service honorees included John Albright of the Propulsion and Power Division; Pam Johnson of the Structure and Mechanics Division; Scott Swan of the Crew and Thermal Systems Division; Susan J. Anderson of the Human Resources Office; David Beverly of the Safety, Reliability and Quality Assurance Directorate; Greg Della Longa of the Business Management Directorate; Heibert Epps of the Reconfiguration Management Division; Georgie Huepers of the Space Flight Training Division; Georgia Piwonka of the Mission Operations Directorate Management Services Office; Sandy Gordon from the Financial Management Division in the Office of the Comptroller; Tom Harmon from the Space Shuttle Program Office; Kathy Leary of the Phase One Program Office; Henry Littlejohn of the Aircraft Operations Division in the Flight Crew Operations Directorate; and Ron Williams of the Facility Development Division in the Center Operations Directorate. Kathy Abotteen of MOD was unable to attend the launch.

Contractor honorees were: Bob Baron, Valerie Matthews, Bob McMahon and Jeff Semrau of Loral; John Christian, John Teel and Marilyn Waegner of Lockheed Martin; Natalya Doroshenko of TechTrans; Carl Elmore of Rothe; Dale Long from AlliedSignal White Sands; Kim McGallion of Johnson Engineering; Terry Michael of Hernandez Engineering Inc. and Chris Provenzana of Johnson Controls.



Photo by Jennifer Casey

Space Artist Robert McCall demonstrates painting techniques to students from Pleasantville Elementary School during a creative workshop held at Space Center Houston.

Space art on display at Space Center Houston

By Karen Schmidt

Space Center Houston is featuring an art exhibit by space artist Robert McCall and local elementary students were recently given art lesson by the famous artist.

The exhibit, "A Vision of the Future, The Art of Robert McCall," features 71 original works including drawings, paintings, murals, stamps, patches and posters. The works span two decades of spaceflight.

"I want to communicate my own personal sense of wonder about the universe, about the environment of outer space, about the potential for the future—on earth or wherever," McCall said in a recent article in *Air and Space* magazine.

The works include a vision of the International Space Station with the Hubble Space Telescope being released from a shuttle's cargo bay. Other high-

lights include images inspired by Apollo missions, the first shuttle flight, Moon and Mars missions and futuristic designs of space tugs and life in the solar system.

Students from Pleasantville Elementary were given their own art lesson by McCall last month. The students were part of a two-hour workshop and created their own interpretation of McCall's *Peace on Earth/Peace in Space* with the artist giving guidance on painting techniques.

McCall's work is featured in a variety of space museums including a six-story acrylic mural—The Space Mural-A Cosmic View—in the National Air and Space Museum in Washington, D. C. Other works have been featured in films 2001: A Space Odyssey and *The Black Hole*.

The exhibit will be featured at Space Center Houston through March 1996.

'Lights on for Life' next week

JSC employees are encouraged to participate in next Friday's "Lights on for Life," in remembrance of people killed or injured in alcohol-related crashes.

This year's one-day nationwide headlight observance is intended to serve as a reminder of the dangers of impaired driving and that law enforcement throughout the nation will target impaired drivers during the holiday season.

Senior Clinton Administration offi-

cial, national law enforcement leaders and highway safety advocates will kick-off the national impaired driving prevention and enforcement initiative Thursday in a Washington, D.C. ceremony.

"Lights on for Life" is sponsored by the National 3D Prevention Month Coalition. It is the prelude to "National Holiday Lifesaver Weekend," a national operation sponsored by law enforcement administrators to bring attention to impaired driving laws.

SCH offers holiday hours

Space Center Houston will offer extended holiday shopping hours for the next two weeks.

Employees may shop for space-related Christmas gifts from 6-9 p.m. Dec. 11 and 18 at the Space Trader

Gift Shop. NASA and contractor badged employees also will receive an additional 10 percent discount this year. Badges must be presented at the time of purchase to receive the discount.

Teaching via digital video

(Continued from Page 1)

work and adapt to living in space. The students were able to ask questions and see first-hand what the "crew" was explaining.

The face to face interaction between the students and the "crew" was "the most effective I have ever seen in a videoconference of this type," said Robert Nahory, director of Education Applications Research at Bellcore Science Labs in New Jersey, who co-sponsored the outreach. Connections also were made to the Christa McAuliffe Foundation meeting held in New Hampshire.

The Space Station Utilization Office's Outreach and Education Integrated Product Team uses the mock-ups and videoconferencing to link-up with schools nationally and internationally employing the latest in digital technology for science distance-learning.

"This videoconferencing capability is just now becoming possible with the availability of desktop videoconferencing on personal computers and Integrated Services Digital Network lines," Dean said. "The team is working with the mock-up personnel and the Space and Life Sciences Directorate to develop a low cost multi-media platform that will allow videoconferencing from the station mockups in support of educational activities, science conferences, payload development and crew training."

The effectiveness and ease of this type of videoconferencing has potential application to the International Space Station. Families of crew members would not have to travel to JSC to communicate with their relatives. Instead, with the availability of ISDN lines and desktop video units, messages to and from family could routinely originate from home or the station on personal computers.

To maximize resources, the team has augmented existing facilities for the outreach and education program.

"We are trying not to bend our budget by developing unique items that would be used for education outreach only," Dean said. "We will be able to use the same system for crew training for the station."

This was the third use of the ISDN communication lines to support an interactive video event. The first was the AIAA Space Medicine and Life Sciences Conference held in April. Conference attendees were able to see the U.S. Laboratory Module interior and interact with station "crew members." In August, visitors to the space station exhibit at the Minnesota State Fair were surprised to be able to see and talk to astronauts Jim Buchli, Jeff Wisoff and Bob Cabana via videoconference from Bldg. 9, Dean added.

Two more video conferences are planned for December.

Galileo information on the Internet

(Continued from Page 1)

to alternate gusts and waning of the solar wind.

"As the solar wind velocity increased, the shock moved inside the position of the spacecraft leaving Galileo again in the solar wind," said Margaret Galland Kivelson of the University of California at Los Angeles, the principal investigator on Galileo's magnetometer experiment.

This crossing and recrossing of the shockwave happened several times, she said, between the first shock encounter on Nov. 16, when the spacecraft was about nine million miles from Jupiter, and Nov. 26 when Galileo finally crossed the main bow-shock at about six million miles out from Jupiter's cloud tops.

The magnetometer science team

also found the first direct evidence that the Jovian magnetosphere was either unaffected or had recovered in the aftermath of last year's impact of Comet Shoemaker-Levy with Jupiter. Some scientists had theorized that the magnetosphere might have been modified significantly by the violent impact, but that appears not to be the case, according to data from Galileo.

Meanwhile, Galileo engineers report that work was completed on the spacecraft's tape recorder to assure its readiness for recording data during Thursday's atmospheric probe descent. Final fine-tuning of the spacecraft's flight path was completed last week.

The Galileo home page may be accessed on the Internet at URL: <http://www.jpl.nasa.gov/galileo>.

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Editor Kelly Humphries
Associate Editor Karen Schmidt

STS-74, stepping stone to station

(Continued from Page 1)

get them something that they wanted and then bring it up there and give it as a gift really emphasized to them that people on the ground cared. That was a really important lesson that we need to take forward."

Mission Specialist Jerry Ross reflected on the future of space and how this mission tied into future plans for a permanent orbiting outpost.

"This mission allowed us the opportunity to see what the International Space Station is going to be about," Ross said. "And, folks if you think you have been working hard and you think the challenges and the excitement that you have now are something, just wait a couple more years until we start assembling the station and get folks up there that are working day in and day out pushing

back the frontiers of science and crossing very broad horizons. It is going to be tremendous and the benefits that we are going to realize from that program are going to be far-reaching and they are going to be great for all mankind."

Mission Specialist Bill McArthur praised the astronauts' families and Mir 20 crew.

"When you get within a few weeks of the flight you become so focused, it takes a special tolerance on their part because to and behold you are not Dad and husband anymore," McArthur said. "When we talk about the success of the docking and the logistics transfer...the Mir crew gets 50 percent of the credit. There was no doubt they were completely committed to this as a joint venture and to the success of our docking."